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ABSTRACT

Following a brief description of primary and secondary education in Sweden, the aims and contents of the reform of higher education implemented in July 1977 are summarized. Basic higher studies (undergraduate courses), organized partly as education programs and partly as single course, are described, including admission requirements and the orientation of courses. Types of institutions and system characteristics are outlined. Admission procedures, vocational guidance, financial aid, the efficiency of tertiary education, enrollment trends, research in tertiary education, and costs of tertiary education are also discussed. The relationship between tertiary education and the labor market is examined, and future reforms being considered are outlined. (SPG)

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COUNCIL FOR CULTURAL CO-OPERATION

Working Party on Diversification of Tertiary Education

Strasbourg, 1 - 3 March 1978

DIVERSIFICATION OF TERTIARY EDUCATION IN SWEDEN

CASE STUDY

Some Basic Information

prepared by Mr. Lennart SANDGREN, Stockholm

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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Chapter 1. The structure of the system

Section 1. Types of schools and courses in primary and secondary education

Sweden is a comparatively large country in area (450,000 km2) but a small one in population (8.3 million inhabitants).

Great changes have taken place in Swedish education throughout the 20th century. Primary, secondary as well as tertiary education is thoroughly reformed since the beginning of the 1950s. The latest reform concerns tertiary education and was implemented on 1 July 1977.

In the following, mainly the present system will be described. Today, the educational system is organised as follows:

1. The comprehensive school ("grundskolan")
2. The upper secondary school ("gymnasieskolan")
3. Higher education ("högskolan")

The comprehensive school

Nine years of school attendance are compulsory in Sweden. This period begins the year the pupil reaches the age of 7 and concludes the year in which the pupil reaches the age of 16. Within a few years most children will have attended a pre-school for one or more years before the age of 7.

The comprehensive school is run throughout the country by the municipalities and free of charge. There are a few privately run institutions but their number of pupils is very small.

Every pupil in the grades 1-6 ("primary education") participates in all the subjects offered.

The bulk of the subjects offered in grades 7-9 ("lower secondary education") is taken by all pupils, including English but 5-6 lessons per week are devoted to select subjects. Almost 60% of the pupils in grade 7 choose a second foreign language (German or French).

The costs of compulsory education are shared by the municipalities and the state. The financial contribution from the state to the local authority corresponds approximately to the sum of the salaries of the teachers.

The number of pupils in one and the same class may not exceed 25 in grades 1-3 or 30 in grades 4-9. For many reasons, eg the pupils often work in small groups, these maximum numbers are seldom reached and the "average teaching group size" is generally much smaller.

The upper secondary school

This school is also - with a few exceptions - run by local authorities and gets state financial support of about the same size as the comprehensive school. Upper secondary education builds directly on comprehensive school but is voluntary. About 3/4 of the age group pass straight on from comprehensive education to upper secondary. Other young people having spent one or more years in the labour market return to education and enter upper secondary schools. The total capacity is adapted to the number of applicants so that almost everybody applying can be accepted, although not always to the specific programme she or he wants due to limitations of the available seats. More than 80% of the age group sooner or later enter upper secondary education.

The municipal school authorities have to follow up the youngsters for at least 2 years after leaving comprehensive school in order to - in co-operation with the local labour authorities - help them to get either education or employment.

The upper secondary school is integrated as different courses of study are offered by one organisation - the "gymnasieskolan" - and often under one roof.

The secondary education consists of the following lines:

3 and 4 year lines:

- liberal arts
- social sciences
- economics
- natural sciences
- technical (four year)

2 year lines:

- music
- social
- economics (two year)
- technical (two year)
- consumer goods

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- nursing
- distribution and clerical
- clothing manufacture
- food manufacturing
- workshop
- motor engineering
- wood work
- building and construction
- electro-technical
- processing techniques
- forestry
- agriculture

In addition to this there also exist a number of more specialised courses, usually shorter than 2 years.

The lines are subdivided into branches, numbering some 120 variations.

The usual age of entrance is 16. The age of leaving depends on what line of study the student chooses. It varies from 18-20 years.

The number of admitted new students in the secondary education field is as follows, (figures from autumn 1976):

Three and four year lines: about 31,000 (29%)

Two year lines: about 49,000 (46%)

Specialised courses: about 34,000

Total: about 114,000

For the lines the number of admitted students are given - within brackets - in percentage of the total number of boys and girls aged 16.

From 1 July 1977 all lines in upper secondary school do give, in general terms, access to higher education (cf p. 12). However, traditionally, the three year lines were the main road to tertiary education.

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A follow-up study of the students leaving the three year lines in secondary education in 1970 shows that among students on the liberal arts, social sciences, and natural sciences lines 90% pursued their studies at tertiary level. The figures for students on the economics and technical lines was 42% and 34% respectively.

Later studies may indicate a decreasing interest for further studies among schoolleavers in the first mentioned group of lines, at least in the sense that they, to a larger extent, postpone their studies. About 70% of those graduating in 1972 were studying one year later.

Among those graduating from the two year lines about 25% have gone to further studies on different levels.

All the lines in secondary education, apart from the liberal arts, the social sciences, natural sciences, and the social lines, are preparing for different professions. Therefore one can say that the secondary education, to a very large extent, contains professional vocational education.

Outside the upper secondary school system, but generally speaking on the same level, there exist so called folk high schools ("folkhögskolan"). Most of them (110) are subsidised by the state but have great freedom to decide themselves on their curriculum. They are either run by the counties or attached to people movements or other organisations. The curricula vary a lot but there exist courses corresponding to the more general education offered within the upper secondary school. The number of students choosing these courses is, however, comparatively small.

Section 2 The system of tertiary education

Subsection 2.0 The reform of higher education

The reform of higher education, implemented 1 July 1977, is based on proposals put forward by several committees, above all the 1968 Education Commission (U 68) and the Committee on Admission to Higher Education. The main decisions were taken by the parliament in 1972 (some general principles concerning admission policy), in 1975 (main points and principles of reform) and 1977 (laws and other regulations).

In the following, a brief summary will be given of the aims and contents of the reform.

Purposes of the reform of higher education

The major education reforms enacted in Sweden during recent decades have been part of a general effort to broaden the content of democracy and to bring about a more equitable allocation of affluence, influence and opportunities of cultural experience. The opening up even of higher education to new groups in society is a

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logical consequence of the comprehensive school and upper secondary school reforms. Not only must the admission requirements of higher education be revised - also its content, organisation and geographical location must be planned with new objectives in mind. Priority must be given to the question as to how higher education is to be distributed between different groups, regions and educational fields in order to cater for the educational needs of individuals and of working life.

The following are some of the main points of the reform.

1. A broadened Högskola (higher education). At the same time as recruitment to existing forms of higher education must be broadened, higher education must be renewed to cater for the educational requirements of new groups of people. The Högskola of the future must be able to cater for all types of needs in the field of higher education and must recruit its members from various kinds of vocational activity as well as from all the lines of the upper secondary school.

The realisation of a broader Högskola on these lines has required among other things rules of qualification and selection whereby various kinds of qualifications, ie not only school qualifications, and real (as opposed to formal) aptitudes for study are taken into account. Furthermore, in order to make it possible and easier to renew the content of higher education, particularly in view of the development of new combinations of courses from different fields, different kinds of education at post-secondary level will be treated together in planning.

2. A Högskola linked with research

One of the traditional characteristics of basic studies at universities and certain other post-secondary institutions has been their relation to current research, as a result of which these studies often cover a wider range and are more problem-orientated than other forms of post-secondary education. It is important that these qualities are extended throughout the entire field of higher education.

Interaction between basic studies and research/research training shall thus be established throughout the whole of the Högskola.

3. A Högskola of democracy

The higher education is part of the public education system and as such exists for the benefit of all members of society. It follows that its affairs can never be made exclusively or even primarily the business only of those who are active at universities and other institutions involved. For instance, public interests have been assured decisive influence on the proportions between different kinds of higher education and on the distribution of such education between different areas and places. The bodies responsible for educational planning include representatives of working life from the sectors where the students are going to work in the future.

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At the same time it is important for those who work at institutions of higher education to play a prominent part in the local planning and direction of education and research. All employee categories and students have been accorded the possibility of exerting influence at different levels of local organisation.

4. A decentralised Högskola

The renewal of higher education shall be founded on local development work in close proximity to the educational and research environment concerned and in close connection with working life. There shall be greater co-ordination between the planning of higher education and social planning generally, eg on regional level.

A transfer of responsibility and powers from central to local and - for purposes of more generalised planning - regional bodies is urgently needed. Decision-making powers concerning each group of business have been located as closely to the reality concerned as requirements of co-ordination, justice and efficiency permit. The units of education and research are therefore given wider powers and more freedom of action.

The new Högskola

This comprises far more than traditional universities and other post-secondary institutions. Higher education includes not only education following upper secondary school but also education which, in the eyes of students or the labour market, constitutes an alternative to the former, even if it is at present based solely on the comprehensive school. The training courses undergone by prospective nurses and infant teachers are examples of education of the latter kind. Shortcycle technical programmes are one example of a new form of higher education.

The line of demarcation between upper secondary school and higher education cannot be determined once and for all. It must be subject to constant reappraisal.

Subsection 2.1 Types of courses

Basic higher studies ("undergraduate courses") are organised partly as educational programmes (lines), partly as single courses.

General educational programmes should correspond to more permanent requirements and are established by the government. They are governed by centrally adopted plans. The more detailed planning of an educational programme may vary from one place to another, and in other respects too the plans provide generous scope for local decisions concerning the planning of courses of study and other matters.

Local educational programmes are set up at the institutions of higher education to suit particular local conditions. These programmes will be a valuable aid in day-to-day work on the development of higher education.

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Individual educational programmes are established locally following applications by individuals. The purpose of these lines will be to cater for special wishes concerning combinations of studies.

One of the important tasks of higher education is to provide knowledge and skill that will serve as a basis for professional activity within a sector - often a wide sector - of working life. Most of the professionally oriented programmes existing at tertiary level before 1 July 1977 have been accomodated within the new organisation of studies as general educational programmes. In accordance with one of the goals of higher education, however, endeavours should be made to broaden courses which today are narrowly specialised and one-sidedly tailored to the requirements of the labour market. On the other side courses of education which lack elements of vocational preparation should be in some way related to working life. Of course these are guiding principles for the development of the content of higher education. They have not led to very radical changes as at 1 July 1977.

For purposes of planning and the allocation of resources and for work on the development of the content and organisation the general educational programmes are divided into the following five vocational education sectors:

- education for technical professions
- education for administrative, economic and social work professions
- education for health care and medical professions
- education for teaching professions
- education for cultural work and information professions

A list of general programmes of higher education as at 1 July 1977 is given in Appendix 1.

Single courses are to provide among other things for in-service and further training needs that are not catered for by complete programmes. Single courses are either identical to elements constituting the programmes or seperate courses. The provision of educational opportunities in the form of single courses throughout the higher education system is particularly important as a prerequisite of recurrent education.

In this connection it should be mentioned that - according to the Parliament's decision - future planning of the education system should be based on the idea of recurrent education - ie, the alternation of periods of education and periods of employment - as a normal model for individual educational planning. Priority

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should be given, in the planning activities of higher education authorities and elsewhere, to measures which will help to make it practically feasible for individuals to plan for recurrent education.

At doctoral level the structure of tertiary education ("graduate courses") follows the traditional:

- humanities and liberal arts
- theology
- law
- social sciences
- medicine
- dentistry
- pharmacy
- mathematics and natural sciences
- engineering sciences
- agriculture
- forestry
- veterinary medicine

Admission requirements

The new admission rules make a difference between general and special qualification requirements. The general qualification requirements are those which everyone must satisfy to be admitted to studies on the post-secondary level. The additional special requirements state the specific previous knowledge for the particular field of study concerned, eg upper secondary school courses of mathematics, physics and chemistry for the study of technology.

The general qualifications should guarantee a good general orientation, and, together with the specific previous knowledge requirements, ensure that the student has the capacity that gives him or her a fair chance to complete the studies concerned.

The main principles for the new rules on general qualification is that substantial competence is more important than formally documented credits. This implies that general qualification for higher education can be achieved in various ways.

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General qualification requirements will be met by the completion of at least two years of secondary schooling including or supplemented by stipulated knowledge of Swedish and English. It is possible to get this competence by comparable schooling outside the integrated upper secondary school, eg in a folk high school, on the condition that the stipulated knowledge of Swedish and English is included or supplemented.

The general qualification requirements will also be met by those who are at least 25 years old and have been gainfully employed for at least four years. These persons shall also have the stipulated previous knowledge of English.

Further, anyone who has satisfactorily completed at least 11 years of schooling abroad satisfies the general qualification requirements if they have the stipulated knowledge of English and knowledge of Swedish to a certain extent.

The intention of the new qualification is, amongst other things, to make better use than in the past of that asset to society represented by scholastically apt but otherwise unqualified persons, and to make recruitment for higher education depend less on the background of the applicant.

Orientation of courses

As has already been said basic higher education, including the vast majority of students, has to prepare for working life. This does not mean - which has also been emphasised - that courses should be narrowly specialised and one-sided. On the contrary, generality and breadth are desirable. For example, courses from the sphere of faculties of arts and sciences should to a greater extent be included in programmes throughout the entire system of higher education.

Another important task for the development of higher education is to broaden recruitment for research training from various kinds of basic education and to broaden research and research training to relate them to problem areas of different courses of basic higher education. The aim is to bring about a transfer of ideas and discoveries between research/research training and all kinds of basic education, including more vocationally oriented studies, which earlier had no direct links to research, and thus to enrich both education and research.

It is not practically feasible for basic education and research/research training always to be conducted at one and the same institution. On the other hand closer contacts should be established between units with and units without a research organisation of their own. Special funds are provided and other measures have been taken to make it possible for research projects to be based even on units of the latter kind. University lecturers

and their counterparts - this includes the teachers now principally responsible for higher education outside the traditional universities - will be given better opportunities of participating in research and research training.

Plans for local and individual educational programmes, together with all syllabi, are established locally. In order to simplify combinations of courses to programmes a uniform system for evaluating the length of studies is introduced. Each course gives a certain number of points. 40 points correspond to an academic year, which means that one unit equals one week of full-time study.

The length of a programme as well as of a single course varies considerably. The normal length for those programmes of basic higher education that correspond to traditional university programmes may be said to be three four years. For some types of education, like medicine and law the time is longer, for others like nursing and health care courses shorter.

The individual student's time for completion of her or his education varies of course even more.

Many courses are given as part time courses, usually in the evenings. This refers particularly to courses in liberal arts and social sciences. Other courses, specifically in medicine, engineering and natural sciences, are usually given only as full-time courses, taking place during the day.

As to principles for evaluation of the results of the students' studies a greater uniformity is pursued in the new system. A triple scale - fail, pass and credit - is the standard for mark-setting.

For several courses, however, it has been decided to use just a two fold scale - fail and pass.

A "Certificate of Education" is given to every one who successfully has completed his or her studies. Degree titles are to be used in cases where they provide meaningful information concerning the main content of a programme and a more simple characterisation of the education in question than is provided by the certificate.

Section 2.2 - 2.3 Types of institutions and system characteristics

Basic higher education is run by state, municipal or county council authorities. The latter, subsidised by the state, includes mostly the parts that earlier did not belong to tertiary level, ie nursing and health care courses. The rest of higher education is run and completely financed by the state.

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Education and research in agriculture, forestry and veterinary medicine take place within a separate organisation under the Ministry of Agriculture.

The remainder - of course the quite dominant part - of higher education is under the Ministry of Education.

The whole system of tertiary education is, however, subject to the same laws and regulations. The organisational structure follows more or less the same structure as most government administration. The two ministries are responsible for the overall planning and co-ordination. The main responsibility of the ministries is to prepare legislation and budget proposals. These proposals are then decided upon by the parliament. The actual carrying out is done mainly by the Office of the Chancellor of the Swedish Universities and Colleges. Under the office there are six regions of tertiary education. Each region has its own board. These regional boards are responsible for the planning and co-ordination of the tertiary education in the region. Roughly 2/3 of the members of the board represent public interests, while 1/3 is recruited within higher education. In each region there are varying numbers of institutions for tertiary education, state run or run by municipalities and county councils.

Regarding the state higher education it is divided into higher education units ("högskoleenheter"). There are totally 25 such units of which the University of Agricultural Sciences is one. Within the field of the Ministry of Education there is one higher education unit in all the places involved except in Gothenburg and Stockholm. In Gothenburg there are two. In Stockholm there is an interim solution with four units and a number of smaller institutes in the cultural field, not yet integrated to one unit.

The future expansion of higher education should be based mainly on higher education units already in existence in 16 places or pairs of places outside the five older university towns. In places lacking permanent resources for higher education it is possible to arrange single courses.

Expansion in different places must be tailored to actual conditions such as the number of students applying. Neighbouring places must co-ordinate their expansion plans. This co-ordination should above all be effected within each of the six higher education regions centred on the six university towns, from north to south: Umea, Uppsala, Stockholm, Linköping, Gothenburg and Lund/Malmö.

Each state higher education unit is directed by an executive committee, the unit board. The board administers all resources and submits budget estimates for ie, basic higher education. It includes persons active within the unit as well as representatives of public interests. Except for the University of Agricultural Sciences about 2/3 of the members will be recruited from within the unit and about 1/3 from outside it.

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Planning and matters concerning the content and organisation of studies in one or more educational programme is the responsibility of programme committees. Normally the main task of a programme committee will be to co-ordinate measures by the various departments concerned, and accordingly the committee has to act in close co-operation with these departments. The committee comprises roughly equal numbers (1/3 of each) of teachers, students and representatives of working life in the field concerned, the last mentioned category including both employees and employers.

Joint departments are an important factor of communications between basic education and research/research training. Normally a department is led by a department board comprising representatives of the employees and students. None of the three groups, teachers, other employees and students, may constitute a majority in this board.

Research and research training should be planned within faculties/sections. Within these faculties/sections, smaller managerial committees are set up with different groups concerned represented. Among other things, bodies of this kind submit budgetary requests for research and research training.

The basic higher education is, as it has been made clear earlier, offered in programmes (lines) and single courses. For each line the curriculum gives the courses that constitute the line and which the student has to follow. Naturally not all units can offer all the different lines. Only the largest units have most of the general lines. The smaller units sometimes can offer a part of such a line. The students are then allowed to begin their studies at such a unit and later transfer to another unit to complete their studies.

Even in other cases transfers of students from one unit to another are possible if the accepting institution has places available.

Chapter 4 Students in tertiary education

According to the decision by parliament in 1977 the basic higher education is divided into 3 groups regarding quantitative planning.

The first group consists of those programmes and courses where the number of study places is decided by the central authorities, in principle the parliament. For the second group the corresponding decision is taken by the unit boards which also can decide on numerus clausus for programmes and courses in this group, if the resources available are not sufficient to meet the individuals' requirements.

The third group, the so-called free field, consists of a couple of programmes and a large number of single courses - mainly in liberal arts and social sciences - where all applicants shall be accepted provided they are qualified. The local board may here decide on numerus clausus only due to lack of teachers and physical facilities.

The introduction of the free field, which was not included in the original proposals and in 1975 the parliamentary decision, has of course, complicated the planning and budgetary process and to a certain extent the admission procedure too.

Section 2.1 Admission

The admission procedure for the programmes and courses in the free field is the following:

The student fills in a form and hands this in most cases to the institution he wants to attend.

This is done in late spring or autumn, depending when the studies begin. If a sufficient number of students have applied, a minimum of 10, the course must be given.

Most programmes and courses do not - as already mentioned - belong to the free field. In this case it may happen that there are more applicants than study places available. Selection rules are then necessary. The new admission procedure will be described here only for programmes. For most general programmes and even some local ones there is a central admission by the National Board of Universities and Colleges.

The qualified applicants are divided into 4 quota groups:

Group I - applicants with certificates from 3 or 4 year secondary school;

Group II - applicants with certificates from 2 year secondary school or the equivalent;

Group III- applicants with certificate from people's high school;

Group IV - other applicants, among other persons above 25 years of age and with a minimum of 4 years working experience.

Outside this system applicants with schooling abroad will form their own group, which is given a certain number of places available up to a maximum of 10 per cent.

Each quota group is allotted study places in proportion to the number of applicants per group.

In each group the applicants are ranked after their credits and the selection begins from the top of the ranking list.

The selection made in groups I, II and III is based on a consideration of school merits and experience of working life.

Selection in group IV is based on experience of working life, and where applicable, the results of a voluntary test of aptitude for studies.

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The new admission rules for autumn 1977, have had somewhat different effects on the composition of the groups of students admitted to different programmes. Regarding education for technical professions it has probably not changed very much, whereas many earlier not qualified for tertiary studies have enrolled in higher education for administrative, social work and cultural work professions. A further effect is that the average age of those admitted to the very attractive education for the medical doctor profession seems to have risen considerably. The reason appears to be that several students who formerly, when school merits were the only selection criterion, had no chance, have now made use of their experiences of working life.

Starting in grade 6 of the comprehensive school and continuing through secondary education there is a vocational guidance. The aim of the guidance is to assess the students abilities and to make the student aware of what he wants to do. There has been, in the last few years, trial activities with intensified vocational guidance, mostly aimed at persons over 16 years who do not carry on studying or do not have a job. These trial activities are carried out in close collaboration between the school, the labour market organisations, and the labour market authorities.

Also in tertiary education vocational and study guidance are mostly aimed at providing information on the available courses, lines of study, labour market situation etc.

For all students in tertiary education there is financial aid available.

The aid is partly grants and partly loans. Unless the student earns above a given sum per year he receives the full aid, provided he/she is single. If the student is married the income of husband/wife is taken into account. The policy is at present to do away with this over a period of two years. The aid might be reduced according to money earned through working outside the studies. The general aid system is so constructed that older full time students, returning to studies from working life might find it difficult to make ends meet. Some special measures have been introduced and further steps are now being studied by a commission.

The loans are to be reimbursed in full by the time the recipient reaches the age of 50 provided the income of the recipient reaches a certain level. The time for paying back might also be expanded beyond the 50 year limit.

The aid is administrated by six regional commissions for student aid supervised by a central body. To get aid the student must show a record of fulfilled studies in accordance with the normal pace of study. If the student does not keep the pace the aid will be withheld. So, the rules for aid might be said to make students speed up their studies, rather than the reverse.

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Section 2.2 The efficiency of tertiary education

The courses offered in tertiary education usually follow a plan of studies covering either one semester or two semesters. The mode of examination differs from traditional written and/or oral examinations to continuous examinations in the form of papers etc. The latter model has become increasingly popular particularly in the social sciences. The dates for examinations of the traditional type are usually pre-determined. However, if a student chooses to, he can take the examination later. This also applies to a student who fails. This means that the period of study for the same course might vary from person to person. However, as has been pointed out previously, the system of aid will prevent students from falling too far behind, unless they support themselves outside the financial aid system.

The rate of drop-out is in many cases not very meaningful, since quite a large number of students enroll in tertiary education with no intention of ever completing a full programme. In the autumn of 1975 almost 2/3 of the students in some fields said they were not aiming at completion of any examination. Students 25 years and older had an even stronger intention of not completing. If one looked only at these figures, the drop-out rate would seem alarmingly high, but this might be seen as a result of the aim of opening the institutions of tertiary education to new groups of students as well as of introducing a recurrent education scheme, a pattern which has thus during the last years already been voluntary adopted by several students.

The costs for producing a graduate in the various types of courses differ quite a lot. The studies made by the 1968 Education Committee on Higher Education show that the highest costs were in the education for some technical professions. The education for health care and medical professions also rank high. The actual costs differ between the different lines within the larger sectors. The highest cost per year is the director line, within the sector of education for cultural and information professions, which in 1972 cost some 90,000 Sw Cr (roughly US$ 20,000 per year). The calculations are made on a yearly basis which means that although a medical student costs 25,000 Sw Cr per year, the total cost for producing a medical doctor might be higher than producing a director, since the study time for a medical student is some 6-7 years.

Section 2.3 Enrollment trends

The [illegible] in higher education increased at an accelerating pace in the 1950s and 1960s until the last years of the 60s. The number of new entrants to universities and colleges in 1960 was about 10,000. At the end of the 60s it reached a peak of about 35,000. This tremendous expansion took place mainly within the essentially traditional structure of higher education, which was not adapted for such an expansion.

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From the end of the 1960s and in the early 1970s there was a decline in enrolment, and in some subjects (liberal arts, social sciences and natural sciences) even dramatic. From the middle of the 70s the number of entrants has increased again, although very modestly compared to the situation during the 60s.

The quantitative development of higher education and its connection with the obvious lack of relevance of traditional higher education for many new students was one of the main objectives for the reform of the system.

The change in the structure as from 1 July 1977 means that it is impossible to give complete and accurate statistics on earlier enrolment, related to the programmes and courses in the new system.

The figures presented below should therefore be looked upon as an attempt to describe the overall picture.

Enrollments in different sectors

The figures given below refer only to freshmen:

	65/66	66/67	67/68	68/69	69/70	70/71
Technical sector:						
males	4120	4650	5840	6830	6040	6180
females	640	800	780	1000	1160	1140
total	4760	5450	6620	7830	7200	7320
Administration, economic and social sector:						
males	4610	5750	7830	10000	9450	10460
females	2740	3450	4580	5640	6260	6580
total	7350	9200	12410	15640	15710	17040
Health sector:						
males	740	860	1090	1120	1280	1310
females	3950	4180	4510	4910	4960	5180
total	4590	5040	5600	6240	6490	6460
Education sector:						
males	2470	2710	2870	2450	2660	2120
females	4510	5630	5520	5550	6660	6270
total	6980	8340	2390	8000	9320	8390
Cultural and information sector:						
males	1990	2440	3130	3400	3100	2920
females	3220	3830	5280	5970	5210	4540
total	5210	6270	8410	9370	8310	7460
Total						
males	13930	16410	20760	23900	22520	22990
females	15060	17890	20670	23070	24250	20770
total	28990	34300	41430	46870	46780	46700

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	71/72	72/73	73/74	74/75	75/76
Technical sector:					
males	5670	5400	5150	5280	5950
females	1000	1160	1130	1150	1320
total	6670	6560	6280	6430	7260
Administration, economic and social services:					
males	9350	8920	8120	8270	9400
females	5910	6010	6100	6950	8240
total	15260	14930	14220	15220	17640
Health sector:					
males	1410	1460	1450	1410	1370
females	5050	4850	4540	4710	4960
total	6460	6310	5990	6120	6330
Education sector:					
males	1840	2010	2060	1990	1880
females	5350	6190	6040	5770	5940
total	7190	8200	8100	7760	7820
Cultural and information sector:					
males	2510	2680	2680	3090	2810
females	3460	4020	3780	4150	4550
total	5970	6700	6460	7240	7420
Total:					
males	22990	20780	20470	19460	20040
females	23710	20770	22230	21590	22730
total	41550	42700	41050	42770	46470

The available statistics make it impossible to distinguish between "university" and "non-university". Furthermore the concepts on university and non-university are not relevant any more.

Below follows estimates for 1976/77 and 1977/78 and forecasts of the total enrollment in tertiary education. The expansion in 1976/77 and 1977/78 has mainly taken place in the administration, economic and social sector and in the cultural and information sector.

76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84	84/85
51000	55100	55900	57100	57290	57800	59080	60530	61350

Section 2.4 Research in tertiary education

As it has been mentioned before in this paper, all tertiary education is to be in some way connected with research. However, since the newly enacted reform of tertiary education went into

effect on 1 July 1977, the realisation of this objective will be a question of several years of development work.

The present law on higher education states that all teaching is to be founded on scientific knowledge.

All professors and associate professors have as their main objective to do research; however, there is usually also a minimum of teaching hours per academic year. The main task of the university lecturer is usually to teach, but this group also tend to try and find time and resources to carry out research.

In the part on the system of tertiary education, the structure of the system was outlined. From this it follows that the research is carried out within the sphere of the faculties (humanities and liberal arts, theology, etc). Money is allocated for each faculty for research and research training. Research and teaching, however, usually take place within the same department.

Section 2.5 Costs of tertiary education

Costs of tertiary education in percentage of GNP (note that here tertiary education only refers to what was viewed as tertiary education prior to 1 July 1977):

1965	1966	1967	1968	1969	1970	1971	1972
0.4	0.47	0.52	0.55	0.60	0.65	0.66	0.73

Costs of tertiary education as percentage of total government expenditure (the figures refer to the concept of tertiary education prior to 1 July 1977):

1965	1966	1967	1968	1969	1970	1971	1972
1.85	1.95	2.15	2.25	2.45	2.80	2.80	2.85

The decision in parliament 1975 concerning the reform of tertiary education included a passage stating that in the planning it should be assumed that the expansion over the next few years should be 2% annually as to full programmes. As to single courses the expansion should be even faster than that. The actual increase will of course depend on a variety of factors such as the enrolments in the so-called "free field", and the economic situation in general.

Below are some figures (million Swedish Crowns) indicating total government expenditure on research:

1971	1973	1975
850	1170	1500

The expenditure is usually made on behalf of institutions of tertiary education or of special research councils, financed by government. The councils then sponsor research mostly at institutions of tertiary education.

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Chapter 3 Tertiary education and the labour market

The expansion of tertiary education is provided for in the parliamentary decision. In the decision on the reform of higher education it was - as mentioned above - stated that the capacity for programmes should expand by 2% annually for the coming 5 years, and the capacity for single courses even faster. This decision depends partly on the labour market prospects but also on the assumption that tertiary education should be made available for new groups of students.

The labour market prospects for graduates have improved slowly from the difficult situation in 1970-72. However, some graduates still find difficulties in finding employment. On the other hand some tendencies to a new shortage of teachers have recently been observed.

Studies are made three years after graduation from higher education to find out about the activities of the graduates. A study made in 1973-74 of 1970-71 graduates shows that 93% had, in their own opinion, qualified jobs. The percentage of graduates working varies of course due to the type of education and also to sex.

A recently published forecast for the whole labour market indicates a general balance for graduates but some tendency to surplus in the administrative, economic and social sector and in cultural professions.

Of course there are special investigations made into separate labour market sectors, like the pre-school teacher sector, teacher sector and similar. The aim of these investigations is to get some indication of the appropriate size of education. It is however explicitly stated in the reform decision that manpower requirements is only one of the factors to consider when planning higher education. A rigid manpower planning approach to education is thus dismissed.

If a graduate has difficulty in finding a job, the labour market authorities are responsible for action to help this person. This can be done by trying to locate vacant positions or by subsidising a position in order to give the unemployed experience and familiarity with the conditions on the labour market. This might of course mean that sometimes a graduate will have to accept a job below his level of education (at least as it is normally conceived).

To get unemployment allowances a person must belong to a so-called unemployment beneficiary fund (run by the unions). A new graduate hardly belongs to this kind of organisation and therefore seldom qualifies for unemployment allowances but he or she can get a special kind of aid after 3 months of unemployment.

Chapter 4 Reform policy

Since the reform concerning basic higher education went into effect on 1 July 1977, there are at present no reforms pending for this level of tertiary education. For the post graduate level and

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the research however, there are committees working on reform proposals. There is also one committee working on reforming the financial aid system. How these reforms will eventually look remains to be seen.

Also, there is a committee working on upper secondary education which of course in the long run will have an important impact on the tertiary education. One main objective here is to adapt even the upper secondary education to the principle of recurrent education.

Of course the evaluation of the implemented reform of tertiary education might result in the need for gradual adjustments. This, however, does not mean that the goals for tertiary education will change. There is a programme for evaluation and following up of different parts of the reform, handled by the National Board of Universities and Colleges.

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A P P E N D I X

List of general programmes of higher education as of 1 July 1977

It should be noted that higher education subjects which are not listed below may be given as local or individual programmes, or as single courses.

Technological training
Agronomist
Architecture
Mining and metallurgy
Biology
Computer technology
Electrical engineering
Aeronautics
Geotechnology
Earth science
Public health and environment protection
Industrial economics
Chemistry
Chemical engineering
Surveying
Mechanical engineering
Mathematics
Technical physics
Technical physics and electrotechnology
Civil engineering
Farm management

Community planner
Domestic supervisor
Social work
Public administration
Catering management
Psychologist
Recreational leader
Accounting and auditing
Transport administration
Administrative systems work
Secretarial work
Youth leader

Medical training
Occupational therapy
Audiological assistant
Speech therapy
Physician
Medical assistant
Laboratory assistant
Ophtalmology assistant
Surgical assistant
Physiotherapy

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Horticulturist
Horticultural technician
Landscape architecture
Forest engineer
Graduate forester
Production technician
Physics

Administrative, economic social training
Automatic data processing
Behavioural sciences
Law
Economy and political science
Social sciences
Economy and business administration

Teacher of commercial and clerical subjects
Art teacher
Domestic science teacher
Teacher of industrial and trade subjects
Handicraft teacher
Teacher of textiles and clothing
Children's care teacher
Nursing and social services programme

Secondary school teacher programmes

History and social sciences programme
Mathematics and natural sciences programme
Languages programme
Teacher of folk high schools

Nurse
Care of the aged
Dentist
Dental hygienist
Pharmaceutical programmes
Veterinary medicine

Teacher training
Pre-school teacher
Elementary school teacher
Middle-school teacher
Teacher in mother tongue for immigrant pupils
Recreational pedagogue
Educational and vocational guidance
Music instructor
Dance instructor
Physical education teacher

Training for cultural and informative occupations

Religion
Journalist
Cultural communications
Church musician
Instrumental musician
Actor
Librarian
Interpreter